

Energy Technology Perspectives : The Role of Energy Technology Innovation in Accelerating Low-Carbon Transitions

“Innovation as a catalyst for energy markets”

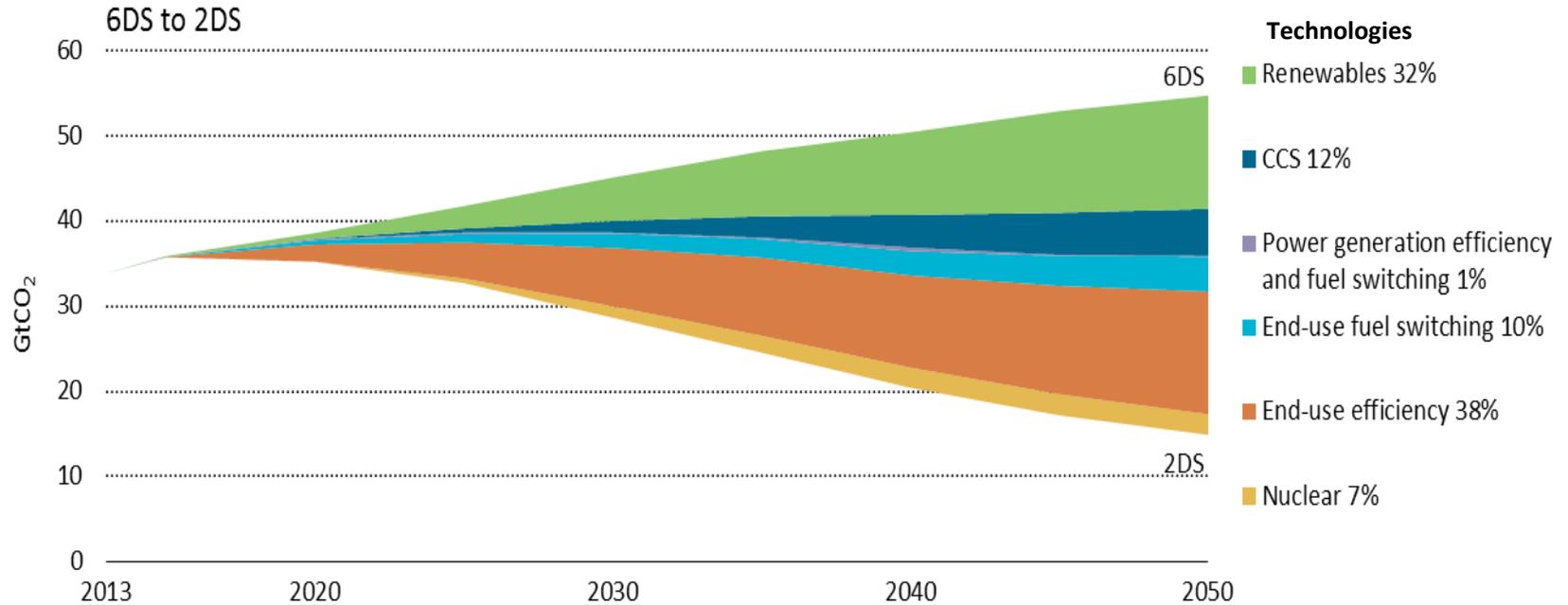
Brussels, 22 June 2016

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International Energy Agency*

- **COP21 provided a historic push for clean energy**
 - Start of a new era of collaboration: Country-based approaches preferred to top-down regulation
 - New goals put forward – going beyond what everyone already considered challenging when our first ETP was released in 2006
- **Growing recognition that greater innovation is essential to meet ambitious climate goals**
 - *Mission Innovation*: 20 countries will seek to double its governmental and/or state-directed clean energy R&D, focused on transformational clean energy technology.
 - 28 private sector investors have joined the *Breakthrough Energy Coalition* to invest patient capital in early-stage technology development.

Energy innovation is crucial in making a 2 Degree Scenario possible

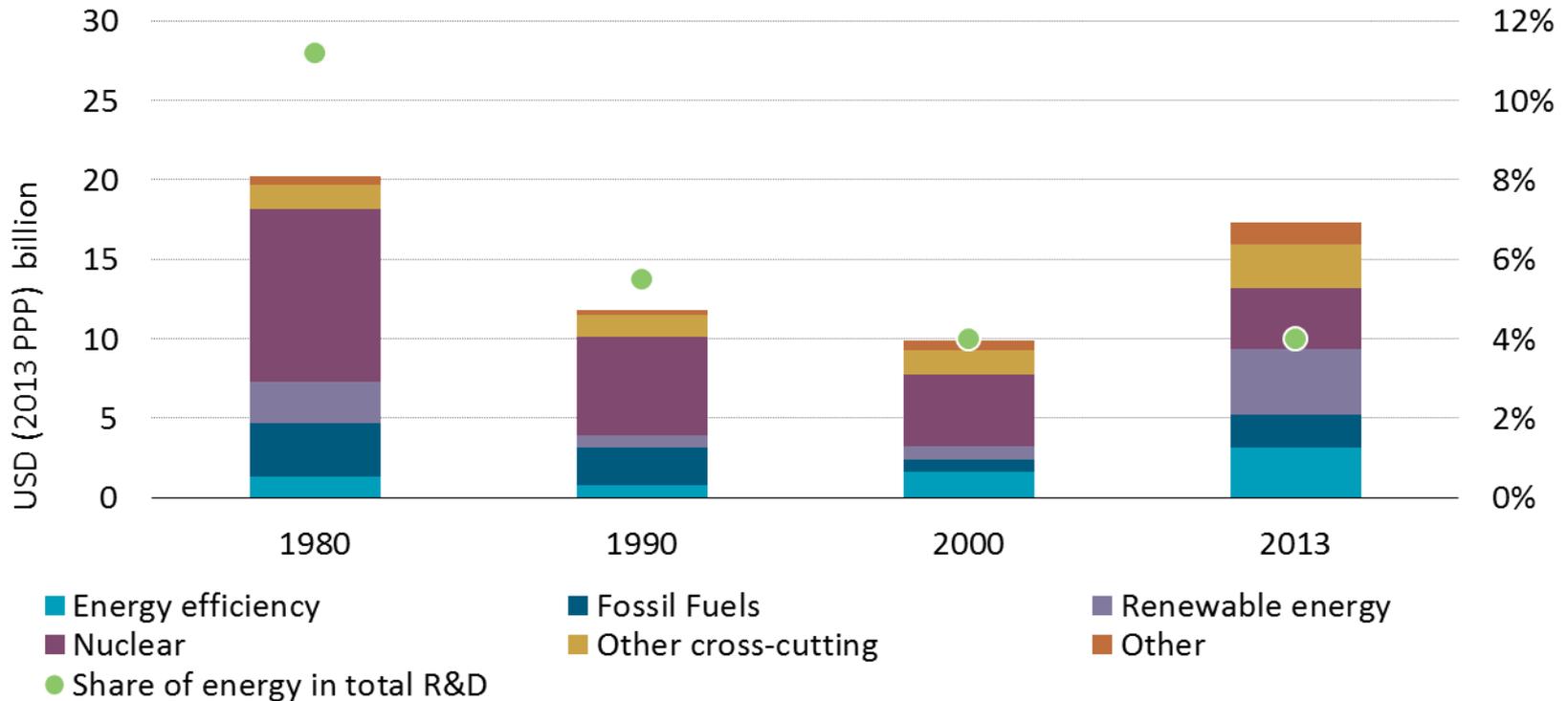
Contribution of technology area to global cumulative CO2 reductions



Energy innovation has already yielded solutions, but needs support and guidance to deliver on its promises

Energy RD&D funding now targets the right issues, but is not enough

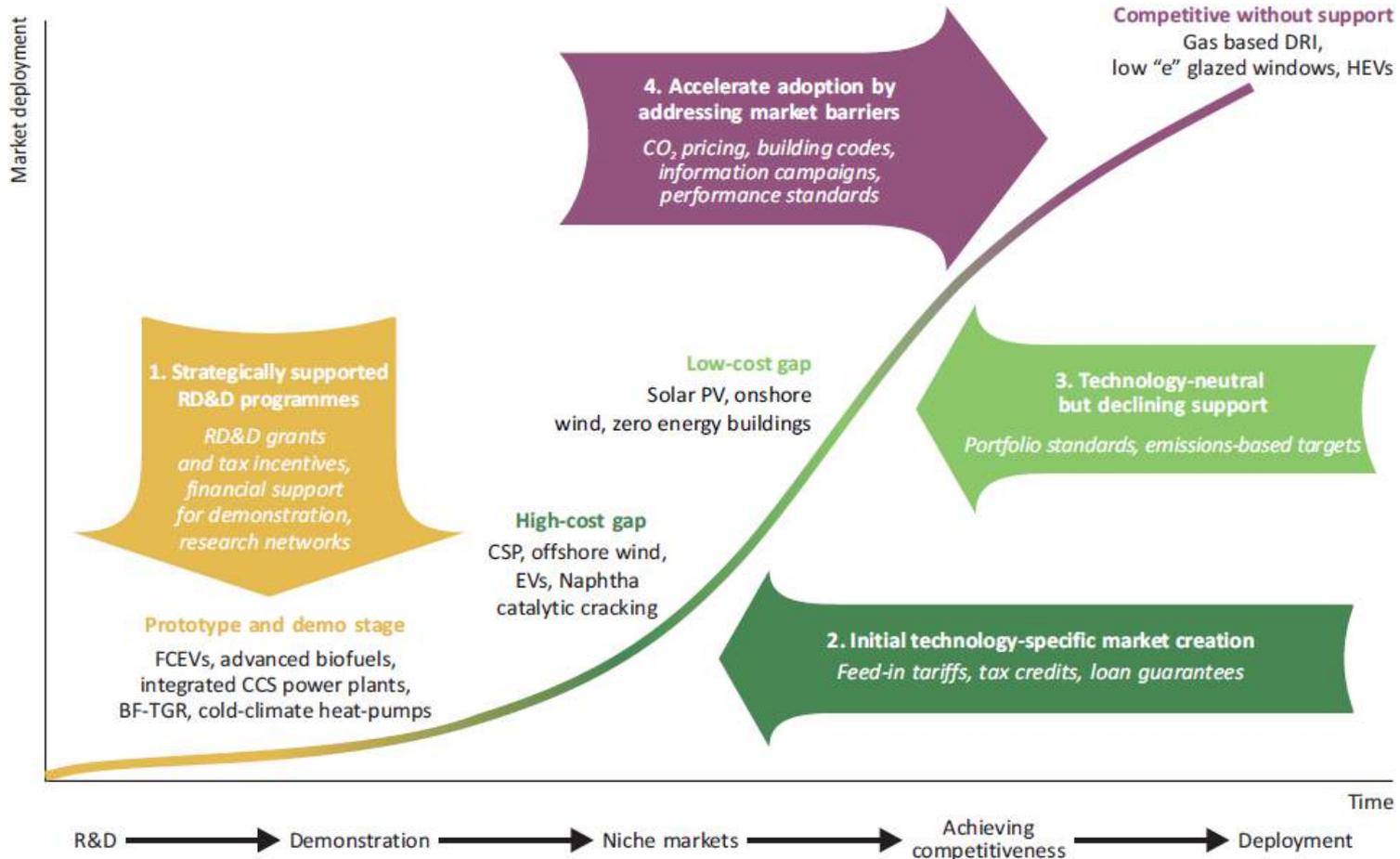
IEA government energy RD&D expenditure



Source: ETP 2015

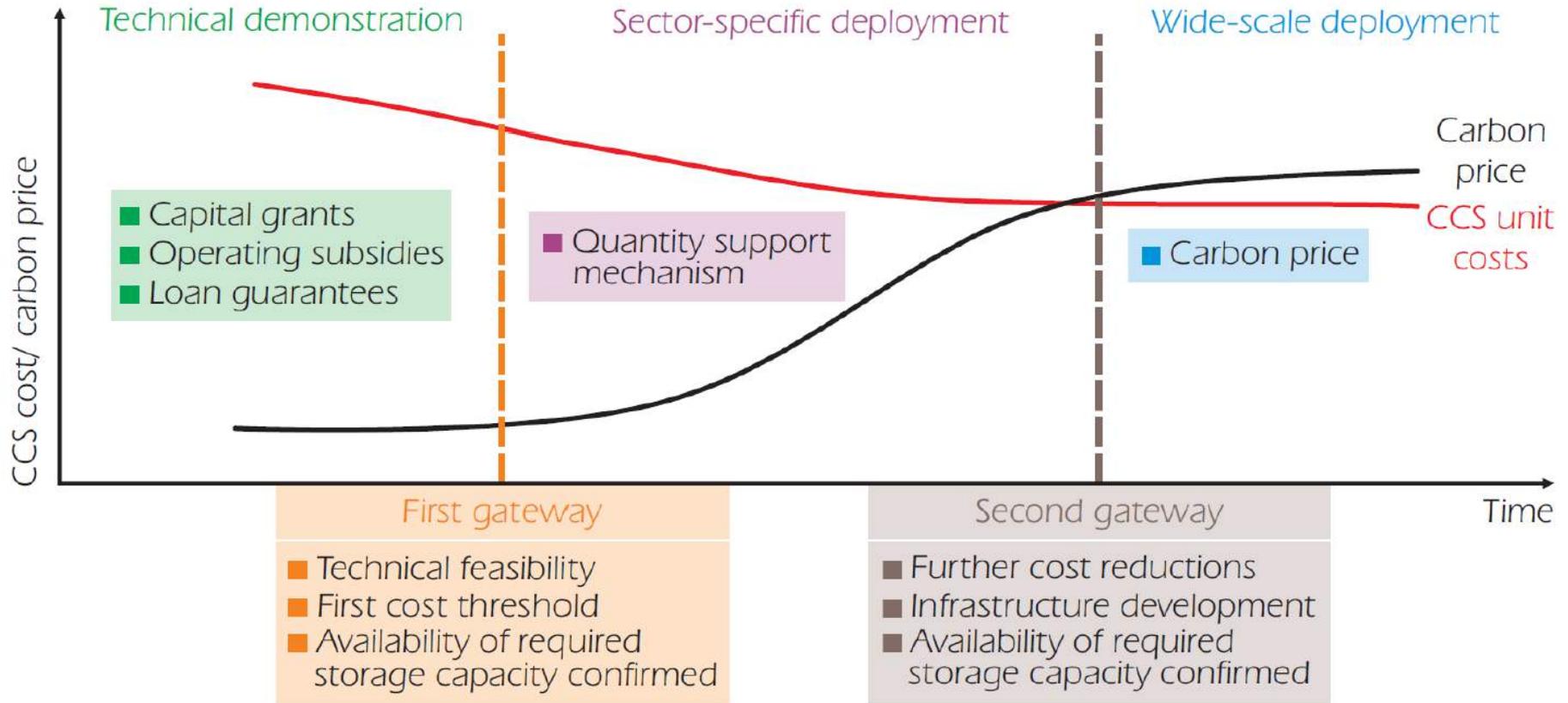
Energy RD&D spending should reflect the importance of energy technology in meeting climate objectives

Supporting Energy Innovation: The right policy at the right time



The right support depends on the maturity of the technology and the degree of market uptake

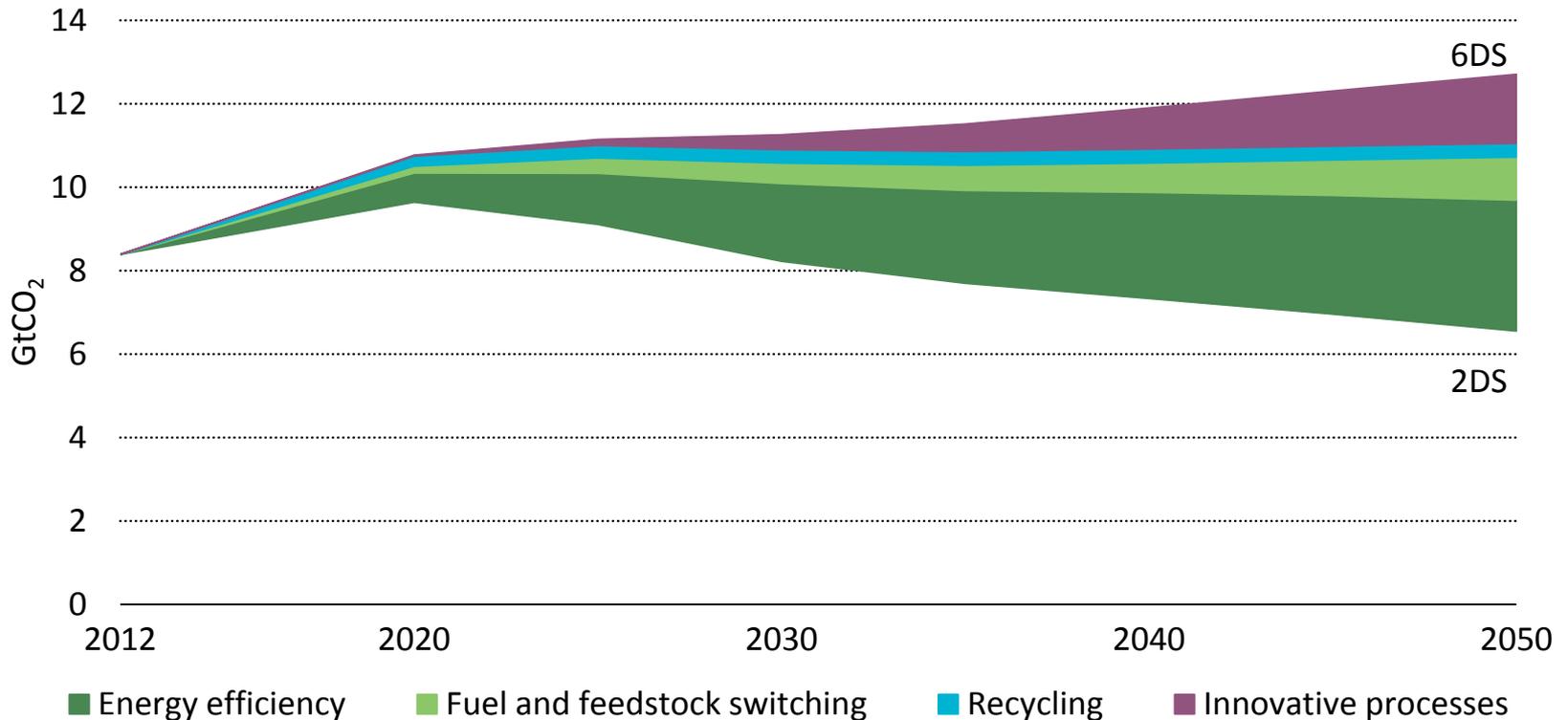
The “cost gap” needs to be closed, not just reduced



During scale up, competitiveness rises due to cost reductions and increased costs of not using CCS

Innovation is essential for sustainable growth in the industrial sector

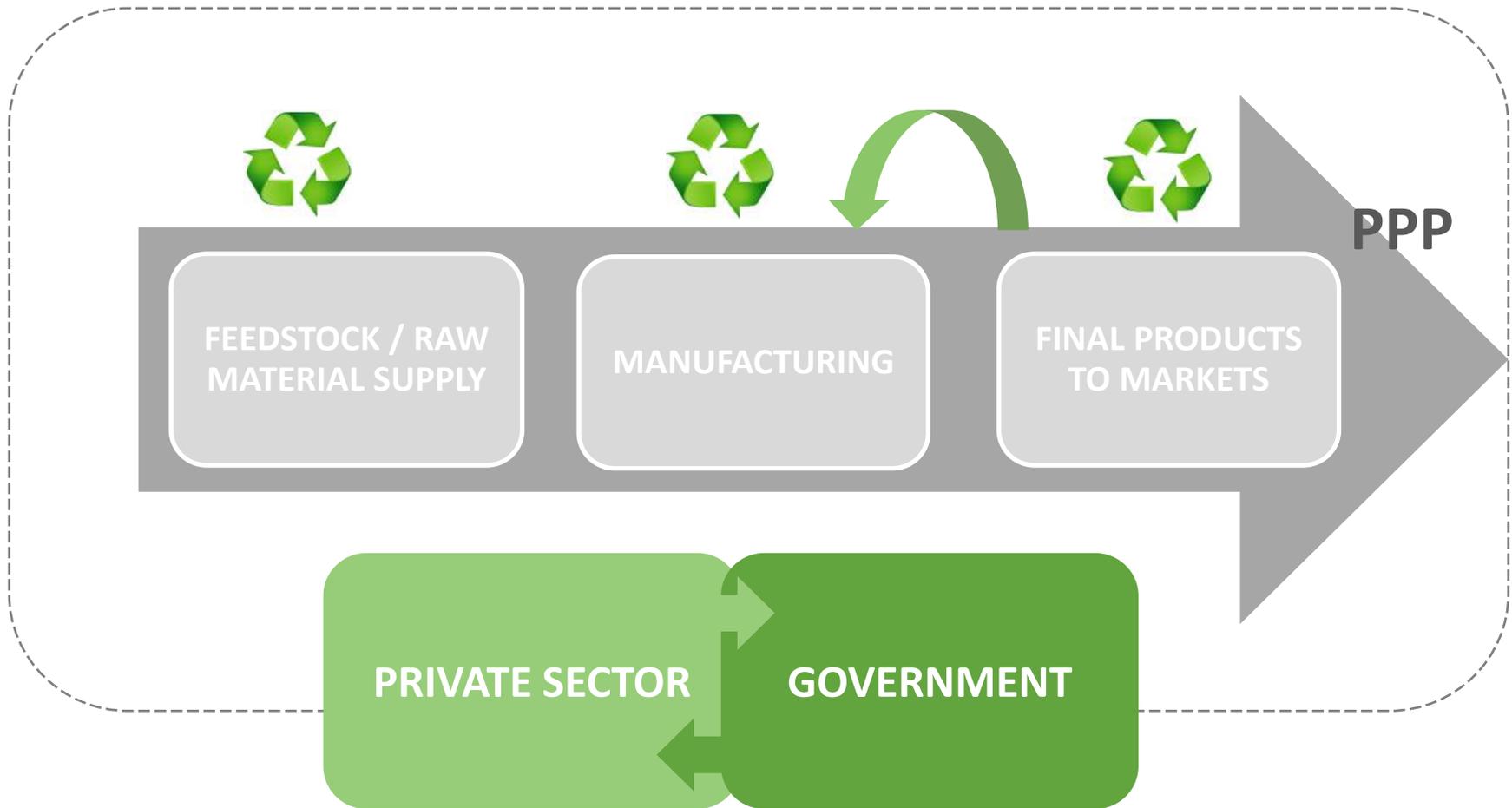
Annual energy-related direct CO₂ emissions in the industrial sector in the 2DS



Source: ETP 2015

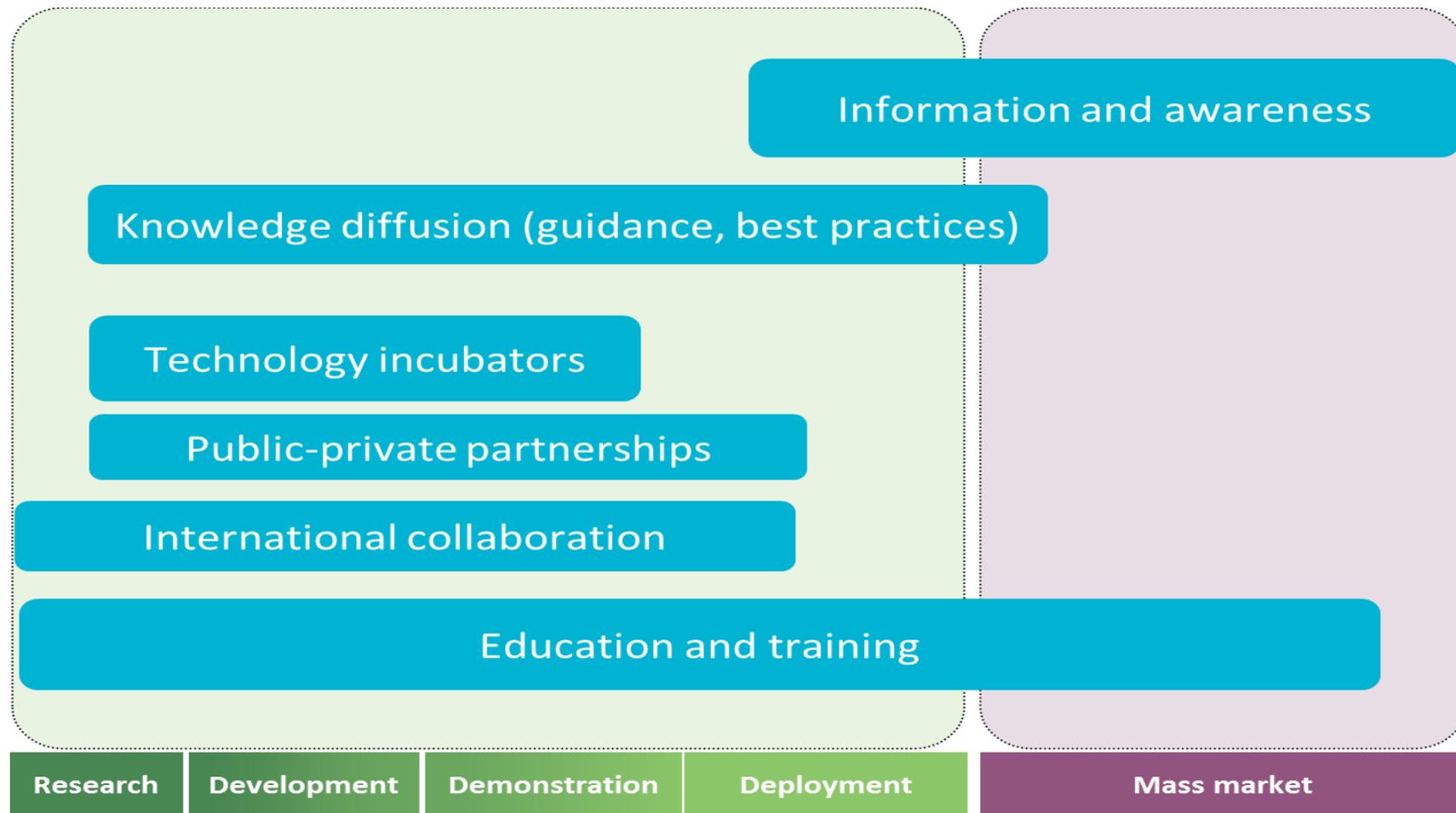
The deployment of innovative technologies is crucial to making a 2DS scenario possible

Role of public private partnerships in catalysing innovation in industry www.iea.org



Partnerships can accelerate innovation while increasing the chances that a technology will be adopted

Building innovation capacity is key to successful technology deployment

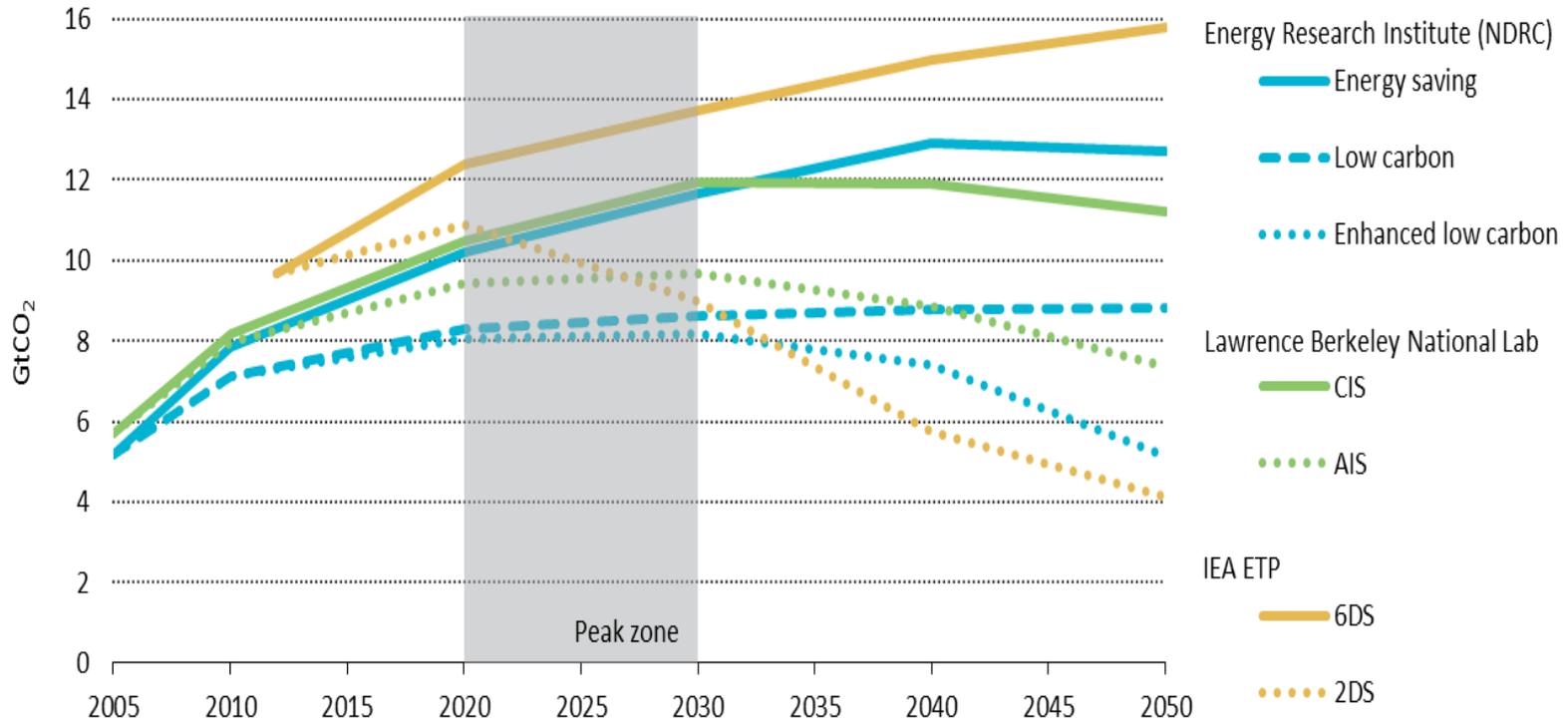


Source: ETP 2015

Cooperation between industrial and emerging economies could be a win-win solution

Solutions exist to China's daunting energy challenge

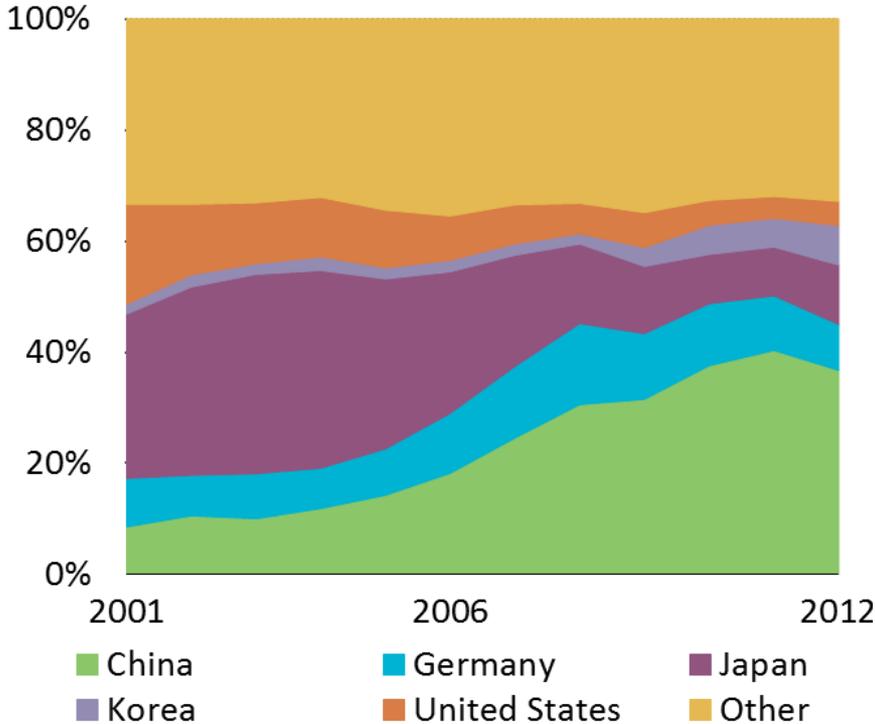
Long-term scenarios of China's 2030 emissions peak



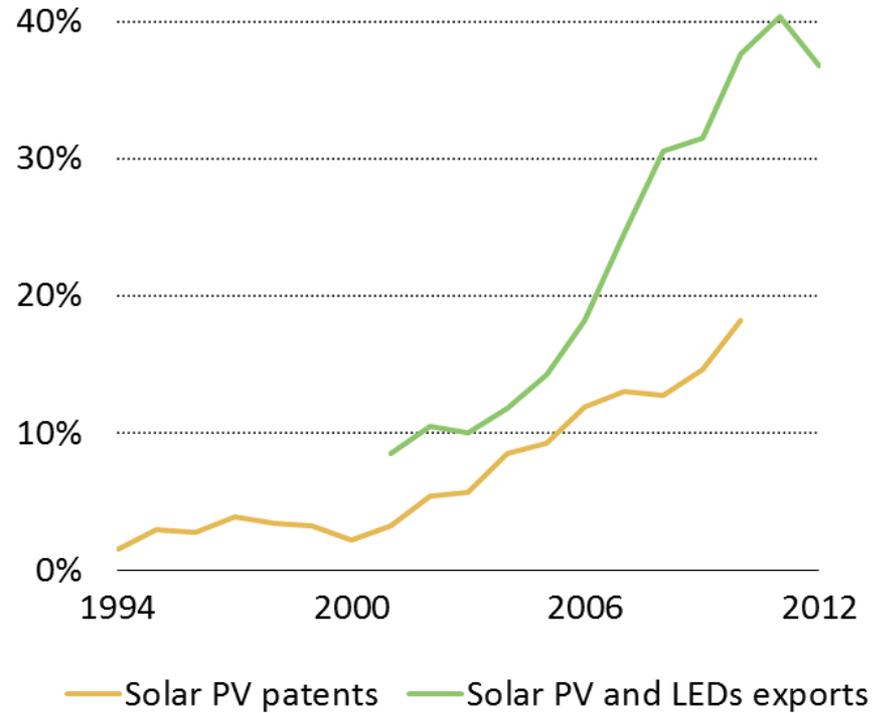
China can make the 2Ds possible with strong policies encouraging energy technology innovation

China is pushing to become an innovation engine

Global solar PV and LEDs exports



China's patents and exports



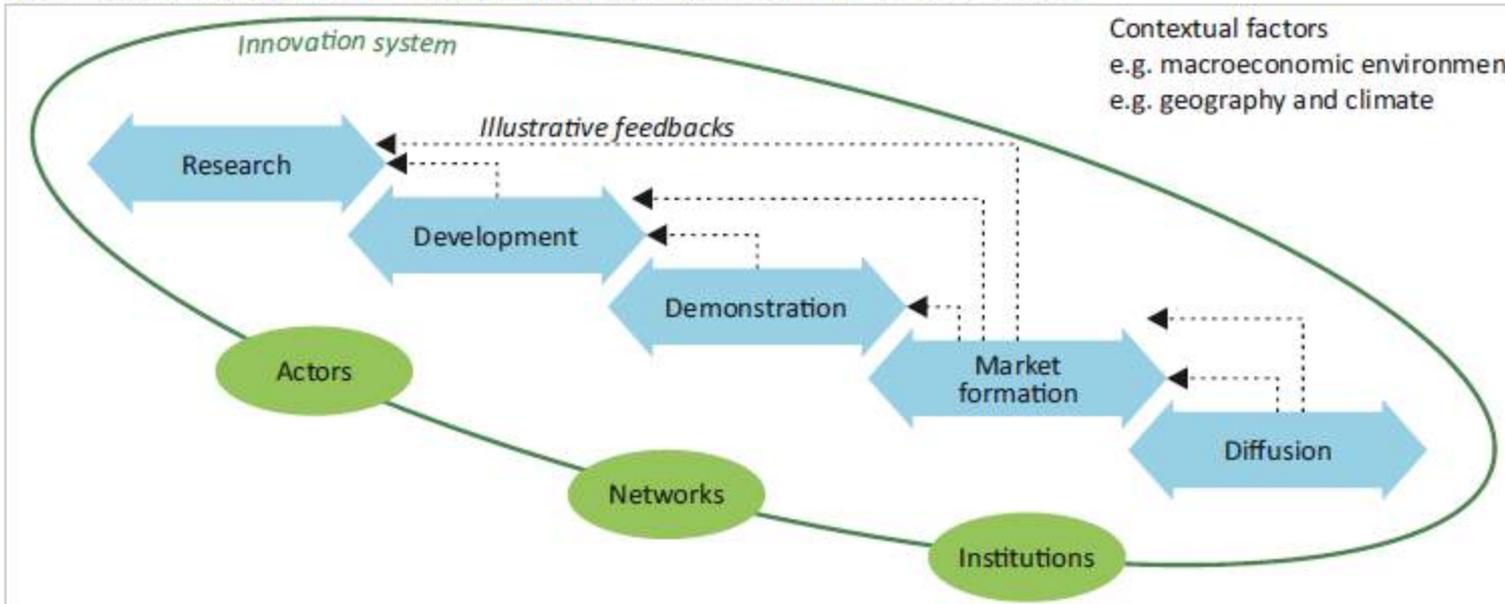
China's global export share by value of solar and LEDs has grown significantly to roughly 40%, with its share of patents doubling between 2005 and 2010.

Better understanding innovation can increase confidence in its outcomes

Linear model of innovation process



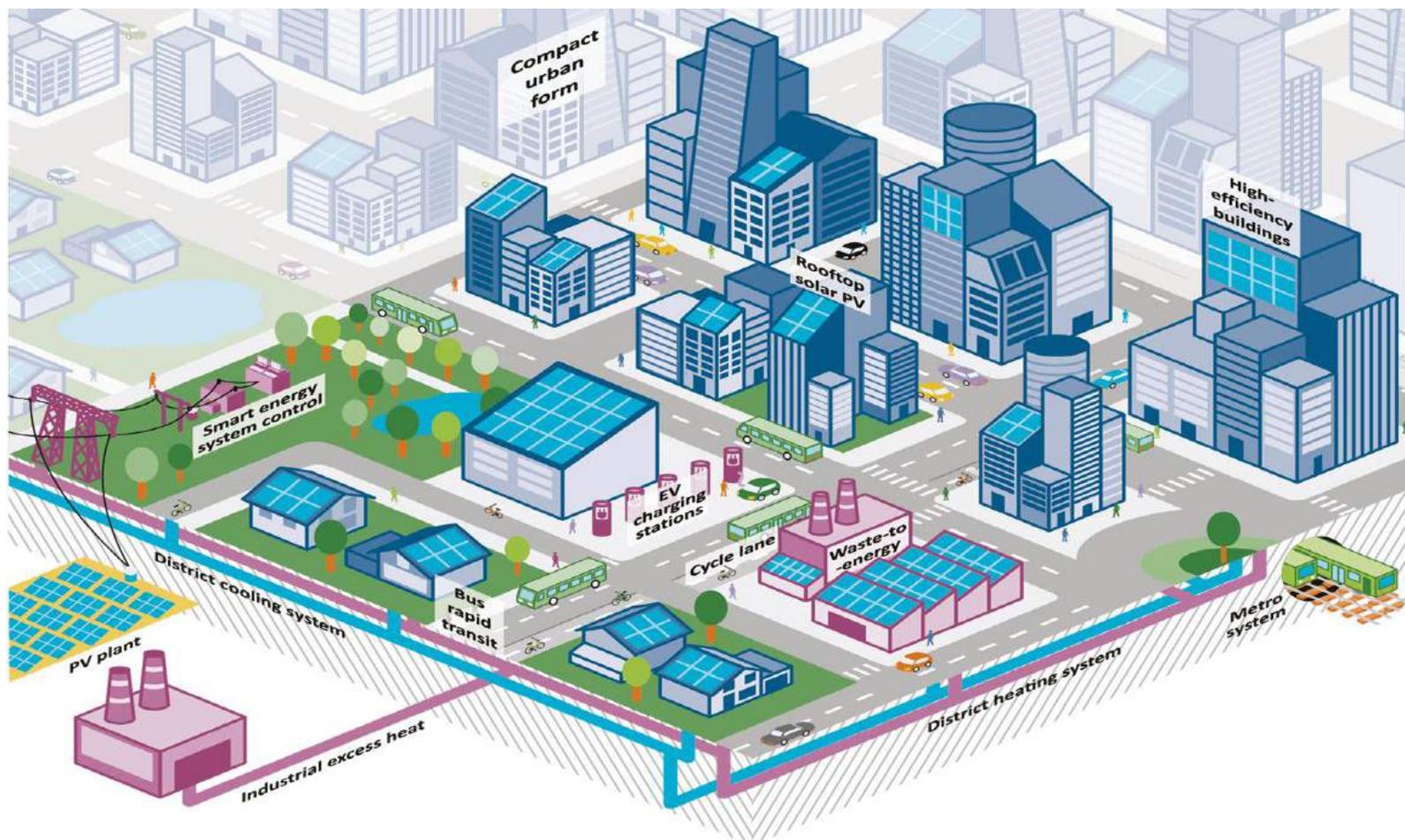
Systematic representation of innovation with chain-linked model of innovation process



In order to accelerate technological progress in low-carbon technologies, innovation policies should be systemic

Cities as clean energy innovation hubs

ETP
2016



Urban energy systems are “innovation-mines”

Thank you

